

RESEARCH PROBLEM STATEMENT #RW-602

I – Problem Title

Standards for Block Configuration Airborne GPS Controlled Photogrammetry for Large Scale Mapping Projects

II – Research Problem Statement

Standards for airborne GPS (AB-GPS) control of block configuration large-scale photogrammetric mapping projects have typically been developed through a process of trial-and-error. Standards and procedures for these projects should be based upon sound scientific analysis as well as the wealth of empirical data available from industry.

III – Objective

The use of AB-GPS control in photogrammetric mapping projects provides substantial savings in survey time and reduces the safety risks surveyors face by nearly eliminating surveys for photogrammetric control within and adjacent to the traveled way. The development of AB-GPS block configuration photogrammetric control standards will facilitate the expanded use of this technology to block configuration projects.

V – Background

The Office of Photogrammetry participated in previous research that established standards for AB-GPS control of strip format photogrammetric projects for large-scale mapping. The standards resulting from this research have been successfully adopted by the department and in industry. However, these standards are not scaleable from strip configuration to block configuration projects without further research

V – Estimate of Duration of Research

1 year.

VI - Statement of Urgency, Benefits, and Expected Return on Investment

The Office of Photogrammetry has experienced a marked shift in the nature of its projects towards fewer but larger block format projects. The results would be deployed immediately upon completion of this short-duration research.

VII – Related Research

1. Appleton, J, Hussain, M. and Munjy R (2000): Strategy for Use of Airborne GPS Data for Corridor Mapping, ISPRS, Amsterdam, Holland.
2. Hussain, M. and Munjy R. (1999): GPS Controlled Photogrammetry For Large Scale Mapping, Final Project Report, New Technology & Research Program, California Department Of Transportation.
3. Hussain, M., Munjy R and Appleton J. (2000): Reliability of On The Fly Kinematic GPS Data for Aerial Triangulation, GPS/ION 2000, Salt Lake City.

VIII - Deployment Potential

This research is the logical follow up to Caltrans' earlier research in the area of airborne GPS control. The Office of Photogrammetry has successfully deployed the use of

airborne GPS for strip based photogrammetric mapping. The development of standards for block format projects should result in similarly successful deployment.